AF

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/516,915	12/06/2004	Alex Karlsson-Parra	1523-1013	8628

466 7590 02/13/2006

YOUNG & THOMPSON
745 SOUTH 23RD STREET
2ND FLOOR
ARLINGTON, VA 22202

EXAMINER	
JUEDES, AMY E	
ART UNIT	**PAPER NUMBER**
1644	

DATE MAILED: 02/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/516,915	KARLSSON-PARRA ET AL.	
	Examiner	Art Unit	
	Amy E. Juedes, Ph.D.	1644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 November 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06 December 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *12/6/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Applicant's amendment, filed 11/25/05, is acknowledged.

Claim 1 has been amended.
Claims 10-15 have been cancelled.
Claims 1-9 are pending.

2. Applicant's election without traverse of group I, claims 1-9, in the reply filed on 11/25/05 is acknowledged.

Claims 1-9 read on the elected invention and are being acted upon.

3. Claim 9 is objected to because of the following informalities: The claim not grammatically corect. For example "wherein hyperthermia is performed... during from 2 to 6 hours". Appropriate correction is required.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

A) Claims 1-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, the term "based upon" an allogeneic APC renders the claims indefinite since it is unclear how this term relates to the claimed method. For example is the method "based upon" the APC, or is the vaccine itself "based upon" the APC?

B) Additionally, claims 4-5 are indefinite since the metes and bounds of antigen of "allogeneic origin" are unclear. For example, it might encompass antigens derived from tumors allogeneic to the APC donor. On the other hand, it might encompass antigens derived from tumors syngeneic to the APC donor, but allogeneic to another individual to be treated. Thus, the term is entirely context dependent. All antigens are allogeneic in one context or another.

C) Additionally, claim 6 is indefinite since it is unclear how a gene encoding for neuraminidase (i.e. a nucleic acid molecule) can, itself, remove sialic acid from the cell surface.

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 6 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for:

a method comprising using neuraminidase, a neuraminidase-producing virus or bacteria, or an antibody against CD43 to remove sialic acid,

does not reasonably provide enablement for:

a method comprising using a gene coding for neuraminidase to remove sialic acid.

The specification disclosure is insufficient to enable one skilled in the art to practice the invention as claimed without an undue amount of experimentation. Undue experimentation must be considered in light of factors including: the breadth of the claims, the nature of the invention, the state of the prior art, the level of one of ordinary skill in the art, the level of predictability of the art, the amount of direction provided by the inventor, the existence of working examples, and the quantity of experimentation needed to make or use the invention, *in re Wands*, 858 F.2d at 737, 8 USPQ2d at 1404 (Fed. Cir. 1988).

"The amount of guidance or direction needed to enable the invention is inversely related to the amount of knowledge in the state of the art as well as the predictability in the art." *In re Fisher*, 427 F.2d 833, 839, 166 USPQ 18, 24 (CCPA 1970). The "amount of guidance or direction" refers to that information in the application, as originally filed, that teaches exactly how to make or use the invention. The more that is known in the prior art about the nature of the invention, how to make, and how to use the invention, and the more predictable the art is, the less information needs to be explicitly stated in the specification. In contrast, if little is known in the prior art about the nature of the invention and the art is unpredictable, the specification would need more detail as to how to make and

use the invention in order to be enabling (MPEP 2164.03)" The MPEP further states that physiological activity can be considered inherently unpredictable.

The specification provides insufficient guidance to enable claims drawn to the method as broadly claimed. Note that the method encompasses the use of gene encoding neuraminidase (i.e. a nucleic acid molecule) to remove sialic acid. Neuraminidase protein or antibodies to CD43 are well documented in the art as agents capable of removing CD43/sialic acid (see Fanales-Belasio, for example). However, neither the instant specification, nor any art of record demonstrates that a nucleic acid molecule, by itself, is capable of removing sialic acid, as instantly claimed. Accordingly, the method as broadly claimed must be considered highly unpredictable. Given said unpredictability, the method of the instant claims must be considered to require undue experimentation.

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1, 6, and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Weiss et al., 1966.

Weiss teaches a method comprising isolating monocytes from the peripheral blood of an individual, followed by treating the monocytes with neuraminidase and pulsing with plastic particles in calf serum (see pg. 1304 in particular). It is noted that both calf serum and plastic particles can be considered antigens. Additionally, said monocytes are antigen presenting cells that are allogeneic to any other individual.

Thus the reference clearly anticipates the invention.

8. Claims 1-3 and 6-7 are rejected under 35 U.S.C. 102(b) as being anticipated by Fanales-Belasio et al., 1997.

Fanales-Belasio teaches a method comprising differentiating dendritic cells from peripheral blood monocytes of healthy individuals, followed by treating with anti-CD43 or

neuraminidase to remove sialic acid (see materials and methods and Fig. 6, in particular). Furthermore, Fanales-Belasio teaches pulsing said treated dendritic cells with an antigen followed by culturing with T cells in complete RPMI, i.e. a suitable medium (see pg. 2204 and Fig. 8 in particular). In addition, said dendritic cells are allogeneic to other individuals (see Fig. 6). and that this property may be exploited to improve their adjuvant activity in tumor immunotherapy (i.e. as a cellular vaccine).

Thus, the reference clearly anticipates the invention.

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fanales-Belasio et al., 1997, in view of Fields et al, 1998.

The teachings of Fanales-Belasio are described above. In addition, Fanales-Belasio teaches that the anti-CD43/neuraminidase treated dendritic cells have a superior ability to stimulate T cells (see Figs. 6-8 in particular), and that this property may be exploited to improve the adjuvant activity of dendritic cells in tumor immunotherapy (see pg. 2210 in particular).

Fanales-Belasio does not teach pulsing treated dendritic cells with a cancer antigen or tumor cell lysate.

Fields teaches that dendritic cells can be pulsed with tumor cell lysates (see pg. 9483 in particular). Additionally, Fields teaches that said tumor lysate pulsed dendritic cells can prime tumor specific T cells in vivo, resulting in decreased tumor burden (see Fig. 6-7 in particular).

Therefore, it would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made to pulse the neuraminidase/anti-CD43 treated dendritic cells taught

by Fanales-Belasio with tumor lysates, as taught by Fields. The ordinary artisan at the time the invention was made would have been motivated to do so, since Fanales-Belasio teaches that neuraminidase/CD43 treated dendritic cells are superior at stimulating T cells, and that this property may be exploited to improve the adjuvant activity of dendritic cells in tumor immunotherapy. Additionally, Fields teaches that tumor lysate pulsed dendritic cells prime tumor specific T cells and can reduce tumor burden.

11. Claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fanales-Belasio et al., 1997, in view of Rees et al., 1991.

The teachings of Fanales-Belasio are described above. In addition, Fanales-Belasio teaches that the anti-CD43/neuraminidase treated dendritic cells have a superior ability to stimulate T cells (see Figs. 6-8 in particular), and that this property may be exploited to improve the adjuvant activity of dendritic cells in tumor immunotherapy (see pg. 2210 in particular).

Fanales-Belasio does not teach exposing the APCs to hyperthermia.

Rees teaches exposing APCs to heat stress (i.e. hyperherimia) of 44 degrees Celsius for 20 min (see pg. 387 in particular). Furthermore Rees teaches that the heat stressed APCs upregulate MHC-II and are more potent at stimulating T cells (see Fig. 1-3, in particular).

Therefore, it would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made to make a APC cellular vaccine, as taught by Fanales-Belasio, including the step of exposing the APC to hyperthermia, as taught by Rees. Furthermore, it would have been obvious to optimized the temperature and time of said hyperthermia. The ordinary artisan at the time the invention was made would have been motivated to combine the steps of treating with neuraminidase and heat stress to obtain an APC with enhanced ability to stimulate T cells than either treatment alone, since Fanales-Belasio teaches that T cell stimulatory capacity of APCs can be exploited for tumor immunotherapy. Furthermore, the ordinary artisan would have had a reasonable expectation of success, since the neuraminidase treatment taught by Fanales-

Belasio, and the heat stress treatment taught Rees both result in an APC with a more potent ability to stimulate T cells.

12. No claim is allowed.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amy E. Juedes, Ph.D. whose telephone number is 571-272-4471. The examiner can normally be reached on 8am - 5pm, Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Chan can be reached on 571-272-0841. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Amy E. Juedes, Ph.D.
Patent Examiner
Technology Center 1600
January 18, 2006

1/19/06
G.R. EWOLDT, PH.D.
PRIMARY EXAMINER